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PATENT

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Appeal Brief
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: EBERHARD KUEBLER ET AL.

Serial No.: 09/487,594 Group Art Unit: 3618

Filed: JANUARY 19, 2000 Examiner: Bridget D. Avery

Title: DECENTRALIZED POWER SUPPLY SYSTEM FOR A
VEHICLE

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APPEAL BRIEF

May 30, 2003

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Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Pursuant to the Notice of Appeal filed January 30, 2003, Appellants herewith submit their appeal brief and appropriate fee in accordance with the provisions of 37 CFR §§1.17(f) and 1.192. A two month extension of time petition under 37 CFR 1.136(a) is submitted herewith.

I. REAL PARTY IN INTEREST

This application has been assigned by the inventors to DaimlerChrysler AG, a German corporation. Accordingly, the real parties in interest to the present appeal are the named inventors and DaimlerChrysler AG.

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II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the appellants, to appellants' legal counsel or to the assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-18 are currently pending in this application. However, claims 11 and 13-16 have been withdrawn from consideration pursuant to the response to Restriction Requirement submitted February 8, 2001. Accordingly, claims 1-10, 12, 17 and 18 are currently being prosecuted in this application. All of the latter claims have been rejected on prior art grounds, and are the subject matter of the present appeal.

IV. STATUS OF AMENDMENTS

Three Amendments, dated October 17, 2001, April 3, 2002 and April 24, 2002, have been submitted in respect of the present application. All three Amendments have been entered.

V. SUMMARY OF THE INVENTION

The present invention is directed to a decentralized power supply system in a vehicle, which achieves a significant saving and efficiency in weight, and also saves on labor expenses in assembly of the vehicle. In particular, in the decentralized power supply system according to the invention, a fuel cell system is installed in, for example, a vehicle door, and is collocated with the electrical

consuming devices in the door, for which it serves as an exclusive dedicated power supply source, as shown in the drawing Figure, and discussed in the specification generally at page 3, lines 4-13 and at page 11, line 17-page 13, line 10. In particular, the figure of the drawing shows a fuel cell stack 16 and an exchangeable fuel cartridge 17 connected thereto, both of which are mounted in the vehicle door, collocated with a drive unit 9 of the window lift mechanism. (See page 11, lines 17-24).

As a result of this arrangement, the wiring necessary to couple the respective power consuming devices with their associated power supply is significantly reduced, achieving a saving and cabling in weight, since each power source is situated only a short distance from the consumers to which it is dedicated. (Page 3, lines 19-22). Furthermore, because of the physical collocation of both the power consumers and the power source in, for example, a vehicle subassembly such as the door (as depicted in the Figure), the latter can be completely assembled with the electrical devices assigned to them (including, for example, a motor for raising and lowering the window, power door locks and the like) as well as the fuel cell system itself, at a location separate and remote from the vehicle assembly line, so that the vehicle subassembly can be installed on the vehicle in a very small number of steps (page 3, line 22 through page 4, line 5; page 12, line 20 through page 13, line 3). In addition, wiring between the vehicle body and the electrical components served by the fuel cell can be eliminated, which not only increases the electrical efficiency of the system (eliminating resistive wiring), but also has the further advantage that wear and tear normally associated with wiring connections between the vehicle body and

door (when the door is repeatedly opened) can be eliminated. (See page 13, lines 3-10).

VI. ISSUES

The issues presented by this appeal are as follows:

1. Whether claims 1, 15, 17 and 18 are unpatentable under 35 USC §103(a) over Chappell et al. (U.S. Patent No. 5,547,208);
2. Whether claims 2 and 3 are unpatentable over Chappell et al. in view of Aoki et al. (U.S. Patent No. 4,785,907);
3. Whether claim 4 is unpatentable over Chappell et al. in view of Wahnish (U.S. Patent No. 3,844,130);
4. Whether claims 6, 7, 9, 10 and 12 are unpatentable over Chappell et al. in view of Mizuno et al. (U.S. Patent No. 5,193,635); and
5. Whether claim 8 is unpatentable over Chappell et al. in view of Wilson et al. (U.S. Patent No. 6,207,310).

VII. GROUPING OF CLAIMS

For the purpose of the present appeal, Appellants submit that the claims should be considered in the following separate groupings:

- I. Claims 1, 6-10, 17 and 18;
- II. Claims 2-5; and
- III. Claim 12.

VIII. ARGUMENT

The present application contains three independent claims (Claims 1, 17 and 18), each of which has been rejected as obvious over the Chappell et al. reference. However, for the reasons set forth hereinafter, Appellants respectfully submit that the latter claims distinguished over Chappell et al., and are allowable. Accordingly, all claims which are currently being prosecuted in this application are also allowable.

The Chappell et al. reference, discloses an emergency vehicle exit arrangement in which an auxiliary battery is provided to supply electric power to the vehicle's windows and door locks when the main battery is destroyed or disconnected from the vehicle's electrical system during a collision. In Chappell et al., however, the auxiliary battery is situated within the passenger compartment of the vehicle. (See Col. 2, lines 57-62; Col. 4, lines 38-44). The specification states that this location of the vehicle in the passenger compartment is considered to be particularly important, because "it is protected from damage when the vehicle is involved in a collision".

Each of independent claims 1, 17 and 18 in the present application, on the other hand, recites in various terms the proposition that the decentralized power system according to the invention includes at least one fuel cell system that is dedicated to supplying electricity to an assigned electrical consuming device incorporated in a structural subassembly of the vehicle, and furthermore that the fuel cell system is collocated with the electrical consuming device to which it is assigned, and is mounted on or in the same structural subassembly of the vehicle in which the consuming device is mounted. (See claim 1). Claim 17

recites that the fuel cell system is “collocated with said electric consuming device, in a structural component of the vehicle”, while claim 18 recites that the fuel cell system is “mounted on or in said component part, collocated with said electrically actuated device, and is dedicated to supply electric power to operate said electrically actuated device.”

The latter features of the invention are neither taught nor suggested by the Chappell et al. reference. In particular, as noted previously, the auxiliary battery 16 in Chappell et al. is centrally located in the vehicle passenger compartment, and is connected to supply electric power to each of the left and right side windows and door locks in the vehicle. Accordingly, the auxiliary battery in Chappell et al. is not collocated in a vehicle subassembly together with a power consuming device or group of power consuming devices to which it is dedicated. Indeed, the auxiliary battery 16 in Chappell et al. provides power to windows and door locks in each of the doors of the vehicle.

Moreover, Chappell et al. actually teaches away from the present invention, stating that it is (as noted previously) advantageous that the auxiliary battery be centrally located in the passenger compartment. Thus, it is not “collocated with the assigned electric consuming device on or in a structural subassembly of the vehicle”, as recited in claim 1, for example, or as similarly recited in claims 17 and 18. Appellants respectfully submit, therefore, that claims 1, 17 and 18 distinguish over the Chappell et al. reference, as do all claims currently being prosecuted in this application.

In addition, each of claims 2-5 in the present application recites that more particularly that the “structural subassembly” referred to in claim 1 comprises a

different specific component of the vehicle. In claim 2, for example, it is a vehicle door, while in claim 3 it is a vehicle seat. Claim 4 recites that the power supply system includes an air conditioning compressor on or in which the fuel cell system is arranged, while Claim 5 recites generally that the system includes a vehicle body module on or in which the fuel cell system is arranged for supplying electricity to electrical consuming devices of that vehicle body module.

Each of these claims has in common the proposition that the module or vehicle component to which the fuel cell system is mounted is a module which is removable from the vehicle, so that it can be manufactured at a remote location, simplifying overall vehicle construction generally, and mounting of the module to the vehicle in particular, since no electrical connections or wiring are required.

Claims 2 and 3 have been rejected over Chappell et al. in view of Aoki et al., which is characterized as teaching an emergency door lock mechanism incorporated in a vehicle door. Similarly, Claim 4 has been rejected over Wahnish which is said to teach "an automobile having an auxiliary air conditioner drive system". Claim 5, on the other hand, has been rejected as obvious over Chappell et al. itself. In each instance, the Office Action merely alleges that it would have been obvious to incorporate the fuel cell system into the specific vehicle components recited in these claims. However, nothing in any of these references teaches or suggests either such an arrangement, or any motivation for such an arrangement. Rather, as noted in the Office Action, Aoki et al. merely discloses only an emergency door lock mechanism in a vehicle door, while Wahnish discloses an automobile having an auxiliary air conditioner drive system. Neither reference contains any disclosure which is directed to the

subject matter according to the present invention, in which a fuel cell system is collocated in the specific vehicle subassemblies, achieving the advantages referred to previously, with regard to weight, electrical efficiency and ease of assembly. In the absence of any teaching or disclosure in Aoki et al. or Wahnish, Appellants respectfully submit that claims 2-5 are allowable for this additional reason as well.

Finally, claim 12 recites a vehicle having a power supply system in which a fuel cell mounted and collocated as recited in claim 1 includes a fuel storage device that is exchangeable or fillable outside the vehicle or the component on which it is mounted. This claim has been rejected as unpatentable over Chappell et al. in view of Mizuno et al., as noted previously. Mizuno et al., in particular, is cited as teaching "a vehicle with fuel cell system including a reformer (29) closed in a fuel storage tank (31)." In particular, with regard to claim 12, the Office Action notes simply that "it would have been obvious to provide such an exchangeable fuel storage device, since it has been held that making an old device portable or movable without producing any new or unexpected result involves only routine skill in the art." Conceding for the sake of argument that the latter is correct, in this case, as noted in the Summary of the Invention, the use of an isolated fuel supply source, collocated in a vehicle subassembly, as recited in claim 1 in which the fuel cell has its own separate fuel supply, which is removable and refillable from the separate vehicle subassembly, does achieve a new and unexpected result in the form of the reduction in weight, increased electrical efficiency, reduction in wear and tear on the electrical system, and simplification of the vehicle assembly procedure. Accordingly, Appellants

respectfully submit that claim 12 is patentable for this addition reason as well. Nothing in Mizuno et al. addresses these issues, or the structure recited in Claim 12.


IX. CONCLUSION

For the reasons set forth herein and above, Appellants respectfully submit that each of claims 1-10, 12, 17 and 18 distinguishes over the cited references, and is allowable. Accordingly, Appellants request that the Board reverse the final rejection of these claims, and allow the present application.

The fee of \$320.00 in payment of the required appeal fee is hereby authorized to be charged to Deposit Account No. 05-1323 (Docket #225/48391).

If necessary to effect a timely response, this paper should be considered as a Petition for Extension of Time. Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/48391). A triplicate copy of this Appeal Brief is attached.

Respectfully submitted,



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APPENDIX

1. A decentralized power supply system for a vehicle, comprising at least one fuel cell system and other power generators, wherein:

the at least one fuel cell system is electrically isolated from the other power generators of the power supply system, and is dedicated to supplying electricity to an assigned electric consuming device that is incorporated in a structural subassembly of the vehicle; and

the at least one fuel cell system is collocated with the assigned electric consuming device, and is mounted on or in said structural subassembly of the vehicle.

2. Power supply system according to Claim 1, wherein said structural component comprises at least one vehicle door on which or in which at least one fuel cell system is arranged for supplying electricity to an electric consuming device of the vehicle door, the consuming device being at least one of a window lift mechanism, an outside mirror heater and an electric mirror adjusting system.

3. Power supply system according to Claim 2, wherein said structural component comprises a vehicle seat which can be movably fastened on the vehicle and on which or in which the fuel cell system is arranged for supplying electricity to electric consuming devices of the vehicle seat selected from the group consisting of an electric seat heater and an electric seat position adjusting system.

4. Power supply system according to Claim 1, comprising at least one secondary unit provided with an electric drive, on which or in which secondary unit at least one fuel cell system is arranged for supplying electricity to the drive, the secondary unit being an air-conditioning compressor.

5. Power supply system according to Claim 1, comprising at least one vehicle body module on which or in which at least one fuel cell system is arranged for supplying electricity to electric consuming devices of the vehicle body module.

6. Power supply system according to Claim 1, wherein the fuel cell system comprises at least one fuel cell and an assigned fuel supply system for the at least one fuel cell.

7. Power supply system according to Claim 6, wherein the fuel supply system has at least one exchangeable fuel storage device.

8. Power supply system according to Claim 7, wherein said fuel storage device comprises a hydrogen cartridge.

9. Power supply system according to Claim 7, wherein the fuel supply system has at least one fuel tank for accommodating a hydrocarbon-containing liquid fuel.

10. Power supply system according to Claim 9, wherein the fuel supply system further comprises a reforming device for conversion of fuel to hydrogen.

11. A vehicle having a decentralized power supply system comprising at least one dedicated fuel cell system, which is electrically isolated from other power generators of the power supply system, for supplying electricity to at least one assigned electric consuming device, wherein both the at least one dedicated fuel cell system and the at least one assigned electric consuming device are collocated on or in a structural component of the vehicle, which can be preassembled as a subassembly.

12. A vehicle having a power supply system according to Claim 8, wherein the fuel storage device is exchangeable or fillable outside the vehicle or the component.

13. A component for a vehicle having at least one electric consuming device and devices for fastening the component to at least one other component of the vehicle, wherein the component has at least one fuel cell system for supplying electricity to its electric consuming devices.

14. Component according to Claim 13, wherein the component can be preassembled as a subassembly separately from other components of the vehicle.

15. Component according to Claim 14, wherein the component is one of a vehicle door, a vehicle seat, and a secondary unit provided with an electric drive.

16. Component according to Claim 15, wherein said secondary unit is one of an air-conditioning compressor, and a component having a photoelectric device.

17. A power supply system for an electric consuming device in a motor vehicle, comprising:

a dedicated fuel cell system connected as an exclusive supply of electric power to said consuming device; wherein

said fuel cell system is electrically isolated from other power generators in said vehicle; and

said fuel cell system is collocated with said electric consuming device, in a structural component of the vehicle.

18. A component part of a motor vehicle, comprising:

an electrically actuated device which is mounted on or in said component part; and

a fuel cell system which is isolated and self contained and is mounted on or in said component part, collocated with said electrically actuated device, and is dedicated to supply electric power to operate said electrically actuated device.